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NYMPHAEA VARIEGATA OR N. AMERICANA?

M. L. FERNALD AND HAROLD ST. JOHN.

IN 1902, Mr. G. S. Miller, Jr., pointed out that the northern Yellow Pond Lily, which had passed as *Nuphar advena*, var. *variegatum* (more recently as *Nymphaea advena*, var. *variegata*), differs from the plant of the southern Coastal Plain in several characters and is a distinct species of boreal range, *Nymphaea variegata* (Engelm.) G. S. Miller.¹ This species is separated from the southern *N. advena*, which has the leaves erect ("occasionally floating in deep water"), on subcylindric petioles, and with a broad sinus, by its floating leaves on "flattened" petioles, and with a closed or narrow sinus. In *N. advena*, furthermore, the inner surface of the sepals is ordinarily suffused with green, in *N. variegata* ordinarily with reddish-purple; in *N. advena* the larger fruit is ordinarily green throughout, in *N. variegata* commonly suffused with red.

Later, in their "*North American Species of Nymphaea*,"² Miller & Standley add other contrasting characters, as, for instance, the more constricted neck of the capsule and the slightly smaller seeds of the northern plant; and study of the available material of the plants has satisfied us that, although some of the statements of characters have been overdrawn and the name finally adopted by Miller & Standley for the northern plant has little to support it, the two plants themselves are well marked species. Since others may have encountered the same difficulties that we have in making the specimens fully coincide with the published characters and in following the logic of

¹ G. S. Miller, Jr., Proc. Biol. Soc. Wash. xv. 13 (1902).

² Miller & Standley, Contrib. U. S. Nat. Herb. xvi. pt. 3 (1912).

taking up a new combination in place of *Nymphaea variegata*, it seems appropriate to record our conclusions.

Since Miller's original publication of *Nymphaea variegata*, an earlier specific name, interpreted as belonging to it, has come to light and the northern plant with floating leaves is rechristened *Nymphaea americana* (Provancher) Miller & Standley,¹ based upon *Nuphar americana* Provancher, Fl. Can. 28 (1862), "excluding synonyms." *Nymphaea variegata* or *N. americana* is described by Miller & Standley as having "Floating leaves usually 17 to 28 cm. long and 11 to 22 cm. wide." This statement of the measurements is very unfortunate, for to those who are familiar with the plant in the area of its greatest development, British America and the northernmost States, it must immediately throw an unnecessary doubt upon the value of the species. Throughout the region from Labrador and Newfoundland to northern Ontario and northern New England, where *N. variegata* grows in nearly every pond, dead-water or shallow pool, it very rarely attains the dimensions assigned it. Of the numerous Newfoundland specimens examined by us (some of them cited by Miller & Standley as coming from "Canada") not one has the floating leaves (dried) more than 11 cm. long, the Newfoundland series showing a variation in size from 6-11 cm. long by 5-8.5 cm. broad; and, although these measurements are from herbarium specimens, it is highly improbable, judging from the ordinary shrinkage of *Nymphaea* leaves under pressure, that the Newfoundland plant ever attained the dimensions assigned by the authors of *N. americana*.

It is not, however, desirable to separate from *N. variegata* or *americana* this small-leaved Newfoundland material for it is clearly the reduced northern state of a species which toward the southern edge of its range becomes much larger and there agrees with the prescribed measurements given for the species. Such small-leaved specimens are known not only from Newfoundland but are the characteristic form from the northern edge of the range, as, for instance, at Nouvelle, Quebec and at North Sydney, Cape Breton (specimen cited, through a clerical error, by Miller & Standley as the basis of the species in British Columbia). And of 43 collections of the plant seen by us from New England 21 have their largest leaves well under 17 cm. in length.

The name *Nymphaea variegata* (Engelm.) G. S. Miller, for the

¹ Miller & Standley, l. c. 78.

northern plant, based upon a well rendered and unquestioned diagnosis as well as upon definite specimens, is open to no doubt; but when the name *N. americana* was brought forward it rested upon a very insecure basis. Miller & Standley (p. 67) state of *Nuphar americana* that "Although intended merely as a substitute for *advena*. . . . The diagnosis clearly refers to the northern plant, and the type locality, Lake St. Jean-Georgie, Quebec, is far beyond the range of *Nymphaea advena*." This should dispose of the matter, but unfortunately the Provancher description, etc. seem to have been misinterpreted, and it therefore becomes important to see exactly what Provancher said:

"NÉNUPHAR. *Nuphar*. Smith.

.....
1. **N. d'Amérique.** *N. Americana*.—*N. advena* Ait.—*Nymphaea advena*. Michx.—(*Lis jaune des étangs. Volet*).—YELLOW POND-LILY.—4 Feuilles épaisses, en coeur, de 6'-10' de long, à lobes divergents, luisantes, flottantes, ou le plus souvent dressées, à pétioles aplatis ou demi-cylindriques. Calice à 6 sépales, les extérieurs plus petits. Stigmate à 12-15 rayons, à bords crénelés, légèrement ombiliqué. Fleurs globuleuses, dressées, portées sur de longs pédoncules droits, charnus. Pétales et étamines jaunes. Fruit ovoïde-oblong, fortement sillonné, tronqué au sommet.—Lac St. Jean —Géorgie, dans les vases des lacs et des marais. Lac St. Joachim! Juin-Août.

a tomentosa. Nutt. Feuilles pubescent blanchâtre en dessous.

Le nom spécifique *advena* qui convient aux Européens étant un contre-sens pour nous, nous avons cru devoir lui substituer celui d'*Americana*."¹

It is, as stated by Miller & Standley, clear that Provancher merely intended *Nuphar americana* as a substitute for the inappropriate name *N. advena*; and it is therefore clear that he had no intention of proposing a new species to be segregated from it. However, since Provancher's intent in the matter seems to have had little weight and he is now made the posthumus sponsor for a new species which he did not understand, as well as for the new name which he *did* understand, it becomes necessary to view the remaining evidence; for we are told that Provancher's "diagnosis clearly refers to the northern plant."

As previously stated by Miller, in the northern plant "floating leaves are the invariable rule."² This is made the key-character in the later treatment and the species is further characterized by having the leaves with "sinus . . . closed or very narrow" and "petioles slender, conspicuously flattened." An inspection of Provancher's descrip-

¹ Provancher, Flore Canadienne, 28, 29 (1862).

² Miller, Proc. Biol. Soc. Wash. xv. 11.

tion, however, gives us the characters: "leaves with the lobes divergent, . . . floating, or more often erect, with petioles flattened or sub-cylindric (feuilles . . . à lobes divergents, . . . flottantes, ou le plus souvent dressées, à pétioles aplatis ou demi-cylindriques)." These characters belong, then, chiefly to the southern *N. advena*, which has leaves erect (or "occasionally floating in deep water") with divergent lobes and subterete petioles, rather than to the northern species with floating leaves with narrower or closed sinus and "conspicuously flattened" petioles, though it is possible that Provancher's "pétioles aplatis" referred to the latter; but it is obvious that Provancher's "leaves with the lobes divergent" and "more often erect" throw the greater part of his diagnosis of the foliage to the southern *N. advena*; for the *less often* floating leaves cannot be taken as *clearly* indicating the northern plant, since the southern *N. advena* has them "occasionally floating in deep water." The floral characters given by Provancher are inconclusive, for his "Stigmate à 12-15 rayons, à bords crénelés" might belong to either the northern plant, described by Miller and Standley with "stigma rays 7 to 25" and with "margin of the disk definitely although not deeply crenate"; or to the southern with "stigmatic disk . . . entire, faintly undulate . . . stigma rays . . . from 9 to 23." And Provancher's description of the fruit as "strongly furrowed (fortement sillonné)" inevitably suggests the southern *N. advena*, with its "fruit . . . with conspicuous longitudinal ribs," quite as vividly as it does the northern plant, with "fruit . . . less strongly ribbed." Provancher's diagnosis was, then, like the name, *Nuphar americana*, intended to cover the aggregate *N. advena* of his day and not to distinguish a northern species different from the southern. This is further indicated by the broad range given by Provancher, "Lake St. John to Georgia," for surely Georgia is well within the range of true *N. advena* and far south of the limits of *N. variegata*, while Lake St. John is near the northern limit of the latter species. The interpretation by Miller & Standley of Provancher's broad range as "the type locality, Lake St. John-Georgie, Quebec, . . . far beyond the range of *Nymphaea advena*," is apparently due to a misreading of the original text; for Provancher, like the author of any other Manual, was merely giving the ranges, not the type localities, of the species included, but he frequently cited stations near the city of Quebec where he knew the plant. This fact, obvious on almost any page of his *Flore*, is illustrated not only by *Nuphar americana* but by the immediately preceding and immediately following species:

Nymphaea odorata. "Québec-Lac Supérieur, dans les lacs où les eaux mortes. Lac Calvet à St. Augustin! Lac St. Pierre!"

Nuphar Kalmiana. "Baie d'Hudson-Lac Supérieur; marais et mares. Bécancour!"

It should be clear then, it would seem, that Provancher's *Nuphar americana* was merely the mixed *N. advena* of his day, but with its characters chiefly drawn from descriptions of the southern plant; and that in using the name *N. americana* he was, as he said, merely substituting an appropriate name for the highly inappropriate one originally given by Aiton. There seems to be, therefore, no good reason why we should take up the name *Nymphaea americana* (Provancher) Miller & Standley for the perfectly clear and unquestioned *N. variegata* (Engelm.) G. S. Miller.

PLURAL SEEDS IN ACORNS.

JOHN G. JACK.

CONCERNING the interesting note by Mr. Charles Piper Smith, in the February number of RHODORA, p. 41, upon "Plurality of Seeds in Acorns of *Quercus prinus*," it may be well to recall that one of the first, if not the first, in this country to publish a statement concerning this peculiarity was the late Mr. Thomas Meehan, of Philadelphia.

Mr. Meehan is recorded, in the Proceedings of the Academy of Natural Sciences, Philadelphia, 1871, pp. 155-157, as stating at a meeting of the Academy that, "In the case of *Quercus robur* a plurality of plantlets from one sprouting seed was not uncommon. He had found dozens in a peck of seed. These were usually in twos, but occasionally in threes. Of the last he exhibited only one specimen. He had examined a half peck of sprouting acorns of *Quercus palustris* and another of *Quercus macrocarpa*, but in these he could detect no sign of variation — each seed seemed cleft smoothly and directly through the center into two regularly equal halves." In *Quercus rubra* he did not find a plurality of embryos although numerous specimens were examined, but he refers to the frequent partial division of the cotyledons by two, three, or four fissures as being remarkable.

The observations made by Mrs. E. G. Britton, and referred to by

Mr. Smith, concerned a "double" White Oak (*Quercus alba*) seedling found on Staten Island in March, 1886. Her note was published in the "Bulletin of the Torrey Botanical Club," vol. XIII, June 1886, p. 95.

Professor Francis E. Lloyd in observations upon germinating acorns of *Quercus garryana* in western Oregon, under the title "Teratological Notes," published in the Bulletin of the Torrey Botanical Club, vol. XXII, 1895, p. 397, says "A number of acorns have been found with two fertilized and developed ovules. The presence of the supernumerary seed is betrayed by the unsymmetrical shape of the acorn. The rightful occupant — if might makes right — is usually well developed and pushes out its radicle earlier than does the intruder, which is correspondingly smaller and flattened and twisted out of shape. Occasionally, when the supernumerary seed is large, if its position is favorable it gets its radicle out of the ruptured apex first. At all events it makes a brave effort to reach soil and sunlight. A few acorns have been found in which the two plantlets had developed into two well-formed seedlings. Acorns containing more than one seed have all been found under young trees. In no case have I found such under aged trees."

Without reference to the records above cited, as well as those made by European observers, I had from my own observations considered the development of plural seeds in acorns so common, particularly in some species of oak, such as *Quercus rubra*, that I have accepted it as a perfectly natural and frequent phenomenon worthy of being considered incidentally by the arboriculturist or silviculturist, and for many years I have called the attention of my students in forestry to these common exceptions to the general rule, since they have a direct bearing upon practical silviculture.

Plural seeds appear to be most common among, if not almost confined to, species of Oaks having naturally large fruits. In northeastern America the Red Oak probably averages larger fruit than any other species and, in my experience, this tree is likely to show, more than others of the region, a larger proportion of fruits producing plural seeds. I think this tendency is indicated in our natural woods by the fact that Red Oaks so often are double trunked, a feature not confined to this species of course, in fact not rarely seen in White Oak and Chestnut Oak and others. Also it must be borne in mind that double trunks may and often do develop because of some accident to the

plumule, causing the growth of two stems from the buds in each axil of the cotyledons, or of two or more than two stems when a well developed young seedling is broken off near the ground or nipped off by some animal or insect. Two or more acorns, also, when planted close together, may produce a plural trunk effect when the trees are old. But on an examination of the trees in a piece of woodland, where all species have had seemingly equal chance, it will often be found that the Red Oak shows a larger percentage of plural trunked trees than other species.

While we have often noted plural stems in seedling Red Oaks in nursery beds no examination has ever been made to show what percentage of the fruits contained more than one fully developed seed from the six ovules which are normally produced in each flower.

Since reading Mr. Smith's note, however, I have thought it might be worth while to get actual figures. Last autumn we had collected in the Harvard Forest, at Petersham, Mass., about half a bushel of Red Oak acorns for planting this spring. These acorns have been kept in a cool place and are in good fresh condition. They were collected from good healthy trees, growing in the open, in the prime of life and vigor, broad spreading and low branched. The acorns may be described as medium sized, being about half the size of the largest sometimes found and nearly double the size of the smallest of well developed acorns found on this species. As they were collected from several trees they show some, though but little, variation in size. From over a quart of acorns taken at random from the half bushel collected last autumn at the Harvard Forest, I have cut and examined two hundred with the following results. 139 acorns with single seeds, and 61 acorns with plural seeds.

Of those with plural seeds 58 contained two developed seeds in each and 3 contained three seeds. Most of those with two seeds had both seeds strong and well developed; in those with three seeds the third seed was generally much crowded and with much reduced cotyledons, in one case being diminutive and crowded into the centre of the acorn and almost completely surrounded by the cotyledons of the two highly developed seeds. The cotyledons of each seed are often very unequal and very unsymmetrical in the fruits with plural seeds.

In all cases where two seeds were found in the acorn they were both apparently sufficiently strong and well developed to grow with nearly equal vigor and to produce two trunks. So far as could be detected

from outward appearances the acorns containing plural seeds did not differ in shape or size from those with single seeds. Possibly the larger acorns when picked out showed more tendency to double seeds but, if so, the difference was slight. Here we have an ordinary chance case which upon examination shows over 30% of the acorns with plural seeds. This is sufficient proof of the frequency of the occurrence. It may be stated that the plural seeds are always at once easily distinguished or separated by the thin testa or seed coat which surrounds and separates them, so that however crowded or mis-shapen they may be there is no reason to confuse the seeds or pairs of cotyledons which are always contained in their own testal envelope.

While some small fruited species, like *Quercus palustris*, probably rarely, if ever, produce plural seeds, it is likely that the tendency will be found in many species in varying degree; probably also influenced by the age or vigor of the trees and the ecological conditions under which they grow.

SCHOOL OF FORESTRY, Harvard University.

THE AMERICAN VARIATIONS OF STELLARIA BOREALIS.

M. L. FERNALD.

Stellaria borealis Bigelow presents in North America such pronounced variations that it has seemed desirable to attempt some organization of them, especially as the major varieties have rather definite and natural geographic ranges. Through much of the range of the species in North America the leaves are linear-lanceolate or lanceolate, the primary ones 2.5-8 cm. long; but in certain districts of both the Northeast and the Northwest there are varieties with short ovate, ovate-lanceolate or elliptic-lanceolate leaves only 0.7-2.5 cm. long.

The plants with elongate linear-lanceolate or lanceolate leaves have ordinarily been treated by American authors as *S. borealis*, which has been divided into a supposedly typical form, with the flowers axillary and the upper leaves scarcely reduced, and a variety "*alpestris*" or "*corollina*" with a loosely cymose inflorescence and the

upper leaves much reduced to scarious-margined bracts. These two tendencies of the species, though sometimes difficult to make out, are for the most part fairly pronounced, but a more significant character is found in the length of the mature calyx and capsule.

In the Northeast, from Labrador to Pennsylvania and the Great Lakes, and locally to the Rocky Mountains, *Stellaria borealis*, whether with only few axillary peduncles or with terminal many-flowered cymes has the mature calyx almost without exception 2–3.5 (rarely 4) mm. long and the mature (but unopened) capsule 3–5 (rarely 5.5) mm. long. In the extreme West, however, from the Behring Sea region to California, the mature calyx of both the plant with few axillary peduncles and the one with the terminal cymes, is 4–5.5 mm. long, the mature capsule 5–8 mm. long. These measurements indicate, then, that in the size of the calyx and the capsule the species breaks into actual geographic trends. The only notable exception, and that only apparently an exception, is the occurrence of plants with the large calyx and capsule on the lower St. Lawrence, from Bic to Anticosti, a region in which three-fourths of the vascular plants show identities or close affinities with the flora of the Northwest.

A glabrous plant with short ovate to elliptic-lanceolate leaves ordinarily less than 2.5 cm. long occurs from Greenland and Labrador to New England and New York, with us oftenest in alpine or boreal districts, and from Alaska to the mountains of Oregon, in Oregon and Washington being regarded as an alpine or subalpine species. This is the plant described by Bongard as *Stellaria calycantha*¹ and treated by some authors as identical with *S. borealis*, by others as a variety of it and by recent American authors as a distinct species of the Northwest.

Another variant, resembling *Stellaria calycantha* but with the young branches covered with dense crisp pubescence, is found on the mountains from Washington to northern California and eastward to Montana. This is the plant described by Howell as *Alsine Simcoeii*,² which seems to be a pubescent extreme parallel with pubescent variants found in many other species of the *Alsineae*.

In the main these six variations of *Stellaria borealis* are well-marked and should be recognized in intensive studies of our flora; but, though some of them have been set off as species, they all show too many

¹ Bongard, Vég. Sitch. 127 (1832).

² Howell, Fl. N. W. Am. i. 83 (1897).

transitional tendencies to warrant their treatment as more than varieties.

The earliest publication of the species seems to have been by Michaux, who named the form with linear-lanceolate leaves and cymose small flowers *Spergulastrum lanceolatum*.¹ Michaux's plant, said to grow "in borealibus Americae septentrionalis," was actually collected, as shown by Michaux's herbarium, on the Saguenay River and Lake Mistassini. By Persoon² the Michaux plant was transferred to *Micropetalon* and by Torrey³ to *Stellaria*, but owing to the existence of an earlier valid species, *Stellaria lanceolata* Poir.⁴ from the Straits of Magellan, Michaux's name cannot be retained for the species under *Stellaria*.

In 1812 Ledebour published *Arenaria calycantha*⁵ from Siberia and in 1832 Bongard, describing from Sitka the plant with short ovate leaves already referred to, called it *Stellaria calycantha*,⁶ basing his name upon Ledebour's *Arenaria calycantha*. Subsequent authors for the most part treated *Stellaria calycantha* as identical with *S. borealis*, but Fries in 1842 accorded it varietal rank as *S. borealis*, var. *calycantha*.⁷ In 1883, however, *S. calycantha* was revived as a species by Professor John Macoun who said, "Specimens . . . are altogether unlike any form of *S. borealis* we possess. The character, 'leaves ovate-lanceolate, connate, the margin minutely ciliate with white hairs, much shorter than the internodes,' separates it from that species."⁸ And in 1897, in the Synoptical Flora, Robinson, following Macoun, took up *S. calycantha* as seemingly a distinct species separated by "Leaves broader, ovate or broadly oblong, seldom an inch long."⁹ If the extreme western material alone were under consideration *S. calycantha* could be easily kept apart from the plants with linear-lanceolate leaves, for *S. calycantha* has small flowers, the mature calyx 2-4 mm. long, the capsule 3-4.5 mm. long; while, as already pointed out, the extreme western plants passing as *S. borealis* have larger flowers, the calyx 4-5.5 mm., the capsule 5-8 mm. long. In the Rocky Mountains and the Northeast, however, numerous transitions

¹ Michx. Fl. Bor.-Am. i. 275 (1803).

² Pers. Syn. i. 509 (1805).

³ Torr. Fl. i. 453. (1824).

⁴ Poir. Encyc. vii. 416 (1806).

⁵ Ledeb. Mém. Acad. Sc. Pétersb. v. 534 (1812).

⁶ Bong. Vég. Sitch. 127 (1832).

⁷ Fries, Novit. Fl. Suec. Mant. iii. 196 (1842).

⁸ Macoun, Cat. Can. Pl. i. 75 (1883).

⁹ Robinson in Gray, Syn. Fl. i. 235 (1897).

occur which leave no single character that can be held as belonging alone to one or another of these plants.

Furthermore, it is very improbable that Bongard's Sitkan *Stellaria calycantha* had anything to do with the Siberian *Arenaria calycantha* of Ledebour with which it has been universally identified and from which it derived its specific name. Were it not practically certain that Bongard had before him and described a different plant, the name *calycantha*, originating in 1812, would have to be taken up as the specific name for the complex species. But an examination of Ledebour's original description of *Arenaria calycantha* shows that he had a plant, possibly a true *Arenaria*, with two ovate bracts toward the summit of each peduncle. Ledebour's diagnosis of the species and his descriptions of the peduncle follow:

"A. foliis oblongis acutis sessilibus basi ciliatis, pedunculis axillaribus unifloris diphyllis.

.....
Pedunculi terminalis et axillares, uniflori, supra medium diphylli.

Flores nutantes, interdum bractea ovata, acuta, calyce majori suffulti." ¹

Although Bongard supposed his Sitkan *Stellaria calycantha* to be *Arenaria calycantha* Ledeb., it is clear from his account that he had not seen material of Ledebour's species but depended upon a determination by Meyer "(fide amiciss. D. Meyer, qui specimina originalia videt)." But Bongard's own species, based on Mertens's material from Sitka, has, as shown by a cotype in the Gray Herbarium labeled by Bongard himself as well as by his description, naked peduncles and is the plant of the Northwest which has been correctly identified with *S. calycantha* Bong.; but it obviously is not *Arenaria calycantha* Ledeb.

The Bongard *S. calycantha* of the Northwest, as already stated, reappears in the Northeast, being the short-leaved plant so familiar in the alpine region of the White Mountains; and, although *S. borealis* has of late been interpreted in America as a plant with elongate linear-lanceolate leaves, it becomes evident from Bigelow's original description that he had the White Mountain plant which closely matches *S. calycantha* Bong. The significant portion of Bigelow's description of *S. borealis* was as follows:

"STELLARIA BOREALIS

Northern *Stellaria*:

S. foliis ovali-lanceolatis; pedunculis axillaribus, elongatis, unifloris; petalis calyci subaequalibus.

.....

¹ Ledeb. l. c.

This plant generally occurs without petals, in which state I discovered it on the White Mountains in July, 1816: I have since received it several times from the same place but always in the apetalous state, until last year, when Messrs. Greene and Little found it there in August with complete flowers.”¹

S. borealis, in this typical short-leaved form, appears to be a circumpolar plant, occurring outside North America, in Scandinavia, Russia, Siberia and Kamtschatka. But so far as the writer can determine the other American variations of the species are endemic.

The common lowland plant of the East, with elongate linear-lanceolate leaves and well-developed cyme, *Spergulastrum lanceolatum* Michaux, has, along with the larger-flowered cymose-paniculate plant of the Northwest, been confused with Fries's *Stellaria alpestris* and with Fenzl's *S. borealis*, β . *corollina*; but neither of these names can be safely applied to either of the North American plants.

S. alpestris, as first published by Fries in 1832, was based upon two plants previously published as varieties of *S. uliginosa* by Hartmann and by Laestadius. These two plants were treated by Fries as *S. alpestris* “ α . foliis omnibus conformibus” and *S. alpestris* “ β . foliis ad axillas caulis in bracteis suppressis, unde caulis apice paniculatus”² Later, however, in 1842, Fries³ reduced his former *S. alpestris* α to *S. borealis*, var. *corollina* Fenzl, while an apetalous state which Fries in the meantime had distributed as *S. alpestris*, var. *aliflora*⁴ was reduced to *S. borealis*, var. *calycantha* (Bong.) Fries. At the same time Fries restricted his *S. alpestris* to the Scandinavian plant with paniculate inflorescence, his earlier *S. alpestris* β which he had subsequently distributed as *S. alpestris*, var. *paniculata*,⁵ and redefined the plant as a species distinct from *S. borealis*. Subsequent European authors have treated this emended *S. alpestris*, sometimes as a distinct species, sometimes as a variety of *S. Friesiana* Fenzl, and again as a hybrid of *S. borealis* and *S. Friesiana*. Authentic material of the plant from Laestadius and from Andersson shows it to be unlike either of the American plants with which it has been identified and there seems to be no reason why the name *alpestris* should be longer used for either of our plants with cymose inflorescences.

¹ Bigelow, Fl. Bost. ed. 2, 182, 183 (1824).

² Fries, Nov. Fl. Suec. Mant. 1. 10 (1832).

³ Fries, l. c. iii. 194–196 (1842).

⁴ Fries, Herb. Norm. III. no. 31.

⁵ Fries, l. c. VII. no. 34.

The other name which has been used for the two American plants with cymose-paniculate inflorescences is *S. borealis*, var. *corollina* Fenzl.¹ This supposition, that Fenzl's var. *corollina* was a plant with paniculate inflorescences, doubtless came about through his citation under it of *S. alpestris* Fries, which, as already shown, was two different species, and of *S. brachypetala* Bong; but there is nothing in Fenzl's treatment to indicate that he was establishing var. *corollina* for a plant with a paniculate inflorescence. On the contrary, he divided *S. borealis* into two varieties based merely on the presence or absence of petals: "*a. apetala*: floribus omnibus v. plurimis apetalis," etc., and "*β. corollina*: floribus omnibus 5 petalis v. paucissimis 3 petalis," etc.² Under each of his thus constituted varieties Fenzl distinguished some forms: of "*β corollina*" "*Lusus 1*. Calyces 1-1½ lin. longi. Caules plerumque abbreviati debiles" and "*Lusus 2*. Calyces plerumque 2 lin. longi. Caules saepe erecti longifolii elongati"; and in his citation of *S. brachypetala* Bong. as belonging to var. *corollina* he further indicates that it is "*Lus. 2*." Subsequent European authors have interpreted var. *corollina* merely as the form of *S. borealis* with petals and there is no clear reason why we should do otherwise. To be sure, Fenzl cited as belonging to his var. *corollina*, *lusus 2*, *S. brachypetala* Bongard with its "*Cyma dichotoma*";³ but as the second form of his variety *S. brachypetala* can hardly be accepted as thoroughly typical of it. This plant, *S. brachypetala* Bong., is, as indicated by Fenzl, one of the large-flowered Northwestern varieties, and Bongard's descriptive phrase "*Cyma dichotoma*," may be taken as a fair indication that he had the large-flowered plant with loose cymes. There was, however, an earlier and quite different *S. brachypetala* of Bunge⁴ from the Altai and on this account Bongard's *S. brachypetala* was renamed by Steudel *S. sitchana*,⁵ which seems to be the first name for our large-flowered cymose plant free from incumbrances.

The other large-flowered plant, the variety with essentially uniform long leaves and scattered axillary flowers, was described from Mertens's Sitka material by Bongard as *S. longifolia* Muhl. But Bongard's description and a sheet of the Mertens collection in the Gray Herbarium show that it is the large-flowered plant which in the extreme

¹ Fenzl in Ledeb. Fl. Ross. i. 382 (1842).

² Fenzl, l. c.

³ Bong. Vég. Sitch., 126 (1832).

⁴ Bunge in Ledeb. Fl. Alt. ii. 161 (1830).

⁵ Steud. Nom. ed. 2, ii, 637 (1841).

Northwest has been passing as *S. borealis* and that it cannot be placed with the earlier-described *S. longifolia* Muhl.

The American variations of *Stellaria borealis* here discussed may be distinguished as follows.

Mature calyx 2-3.5 (rarely 4) mm. long: mature but unopened capsule 3-5 (rarely 5.5) mm. long.

Leaves ovate, ovate-lanceolate or elliptic-lanceolate, the primary ones 0.7-2.5 cm. long.

Branches glabrous or essentially so.....1. *S. borealis*.

Branches densely pilose.....2. var. *Simcoei*.

Leaves lanceolate to lance-linear, the primary ones 2.5-5.5 cm. long.

Upper leaves long and but slightly reduced, herbaceous throughout; flowers few, axillary and terminal.....3. var. *isophylla*.

Upper leaves much reduced to short scarious-margined bracts: flowers numerous in terminal cymes.....4. var. *floribunda*.

Mature calyx 4-5.5 mm. long: mature capsule 5-8 mm. long: leaves lanceolate to lance-linear, the primary 2.5-8 cm. long.

Upper leaves long and but slightly reduced, herbaceous throughout: flowers few, axillary and terminal.....5. var. *Bongardiana*.

Upper leaves much reduced to short scarious-margined bracts: flowers numerous in terminal cymes.....6. var. *sitchana*.

1. *S. BOREALIS* Bigel. Fl. Bost. ed. 2, 182 (1824). *S. alpestris* a Fries, Nov. Fl. Suec. Mant. i. 10 (1832). *S. calycantha* Bongard, Vég. Sitch. 127 (1832); T. & G. Fl. N. A. i. 186 (1838); Macoun, Cat. Can. Pl. i. 74 (1883); Robinson in Gray, Syn. Fl. i. 236 (1907); not *Arenaria calycantha* Ledeb. Mém. Acad. Sc. Pétersb. v. 534 (1812). *S. borealis*, var. *calycantha* Fries, Novit. Fl. Suec. Mant. iii. 196 (1842), in part. *Alsine borealis* Britton, Mem. Torr. Bot. Cl. v. 149 (1894), in part.—Wet or cool, often shaded situations; circumpolar. In North America from Greenland and Labrador to Alaska, south to Newfoundland, New Hampshire, western Massachusetts, central New York, Alberta and Oregon; southward often alpine or subalpine.

2. Var. **Simcoei** (Howell), n. comb. *Alsine Simcoei* Howell, Fl. N. W. Am. i. 83 (1897).—Alpine and subalpine habitats, Washington to Montana and northern California.

3. Var. **isophylla**, n. var., caulibus flaccidis 0.3-4 dm. longis; foliis lanceolatis vel lanceolato-linearibus omnibus conformibus vel subconformibus, primariis 2.5-5.5 cm. longis 2.5-7 mm. latis; floribus paucis plerumque terminalibus deinde axillaribus, pedunculis fructiferis divergentibus; calycibus fructiferis 2-4 mm. longis; petalis nullis vel inconspicuis; capsulis maturis 3-4.5 (-5) mm. longis.

Stems flaccid, 0.3-4 dm. long: leaves lanceolate or lance-linear, uniform or nearly so; the primary 2.5-5.5 cm. long, 2.5-7 mm. wide: flowers few, mostly terminal, becoming axillary; the fruiting peduncles divergent; fruiting calyx 2-4 mm. long: petals none or inconspicuous: mature capsules 3-4.5 (-5) mm. long.—*S. borealis* of many American authors.—Wet places, Labrador to Alaska, south to Newfoundland, Magdalen Islands, Prince Edward Island, New England,

Pennsylvania, Michigan and Utah. A plant from open woods, Gap Mt., Troy, New Hampshire, 13 June, 1898 (*Rand & Robinson*, no. 459 in Gray Herb.) may be designated as the type specimen.

4. Var. **floribunda**, n. nom. *Spergulastrum lanceolatum* Michx. Fl. Bor.-Am. i. 275 (1803). *Micropetalon lanceolatum* Pers. Syn. i. 509 (1805). *Stellaria lanceolata* Torr. Fl. i. 453 (1824), not Poir. Encyc. vii. 416 (1806). *S. borealis*, var. *alpestris* Gray, Man. ed. 5, 93 (1867) as to *Robbins* plant but not *S. alpestris* β . Fries, Nov. Fl. Suec. Mant. i. 10 (1832) nor *S. alpestris* Fries (emend.) l. c. iii. 194 (1842). *Alsine borealis alpestris* Britton, Mem. Torr. Bot. Cl. v. 149 (1894), in part, not *S. alpestris* Fries. *S. borealis*, var. *corollina* Robinson, Proc. Am. Acad. xxix. 286 (1894), in part, not Fenzl in Ledeb. Fl. Ross. i. 382 (1842).—Wet or shaded places, Newfoundland to British Columbia, south to Nova Scotia, New England, New York, Michigan, Wisconsin, Minnesota and the mountains of Utah. *Rydb. calls A. brachypetala* (Bong.) Howell

5. Var. **Bongardiana**, n. nom. ~~*S. longifolia*~~ Bongard, Vég. Sitch. 126 (1832), not Muhl. in Willd. Enum. 479 (1809). *S. borealis* of American authors, as to plant of the extreme West.—Wet or shaded places, Alaska to California; also eastern QUEBEC: Anticosti, Pursh; Bic, F. F. Forbes.

6. Var. **sitchana** (Steud.), n. comb. *S. brachypetala* Bong. Vég. Sitch. 126 (1832), not Bunge in Ledeb. Fl. Alt. ii. 161 (1830). *S. sitchana* Steud. Nom. ed. 2, ii. 637 (1841). *S. borealis*, var. *corollina* Gray, Proc. Am. Acad. viii. 378 (1872); Robinson, l. c. 286 (1894) as to western plant, not Fenzl l. c. (1842). *Alsine borealis alpestris* Britton in Britton & Brown, Ill. Fl. ii. 24 (1897), in part, not *S. alpestris* Fries, ll. cc. *A. brachypetala* Howell, Fl. N. W. Am. i. 82 (1897) in part (as to Bongard synonym).—Wet, shady places, Alaska to Oregon and Idaho.

GRAY HERBARIUM.

A PUBESCENT VARIETY OF THE DWARF RASPBERRY.—While recently working over a collection of plants from the Penobscot Bay region of Maine, a specimen of the Dwarf Raspberry *Rubus pubescens* Raf. (*R. triflorus* Richardson) was noted which differed from the usual form in the pubescence. The common plant has the leaves glabrous or slightly pilose on the veins beneath, while the plant from Penobscot Bay has the mature leaves densely pilose beneath. Further examination of material in the Gray Herbarium and the Herbarium of the New England Botanical Club showed this to be a well marked tendency occurring in several places, and it should therefore be recognized as a variety, and may be called

RUBUS PUBESCENS Raf., var. **pilosifolius**, n. var., foliis subtus dense pilosis.—NEWFOUNDLAND: Channel, *Howe & Lang*, No. 907; Balena, Hermitage Bay, *Palmer*, No. 1352. QUEBEC: Basin Island, Magdalen Islands, *Fernald, Bartram, Long & St. John*, No. 7645. MAINE: Brooklin, *A. F. Hill*, No. 1015 (TYPE in Herb. New England Bot. Club). MASSACHUSETTS, Purgatory Swamp, Dedham. *C. E. Faxon*. MICHIGAN: Keweenaw Co., *O. A. Farwell*, No. 182.—ALBERT F. HILL, Cambridge, Mass.

KJELLMANNIA SORIFERA FOUND ON THE RHODE ISLAND COAST.—A single specimen of the alga *Kjellmannia sorifera* Reinke was washed ashore at Bristol, Rhode Island, March 4th, 1901. It has been held until this time in the hope that the discovery of other specimens might throw further light upon the place of its growth. It was found after a storm, and is believed to have drifted from a locality further southward in Narragansett Bay. Since it is known only in the Southwest Baltic, and was not recognized there until 1888, its occurrence in our waters is a matter of surprise as well as congratulation. Whether, like various other brown forms, it came to us by currents from Greenland, is a problem reserved for the future. The thanks of the undersigned are tendered to Dr. W. G. Farlow and to Mr. Frank S. Collins, who have very courteously examined the specimens.—R. E. SCHUH, Howard University, Washington, D. C.

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